

identified GUI objects of the mixing console GUI to reflect the modifications; and determine input data based on the at least one touch input and the one or more identified GUI objects.

[0017] As a touch-sensitive apparatus operating as an electronic keyboard, one embodiment of the invention includes at least: a touch screen having a display area that also operates as a touch input area; and a plurality of keyboard keys being displayed in the display area of the touch screen and being interactive with a user through interaction with the touch input area of the touch screen.

[0018] As a method for operating a computing device having a touch screen, one embodiment of the invention includes at least the acts of: displaying a keyboard Graphical User Interface (GUI) having a plurality of keys on the touch screen; determining whether at least one touch input has been detected; identifying the one or more keys that are associated with the at least one touch input; determining modifications to the one or more identified keys based on the at least one touch input; updating the one or more identified keys of the keyboard GUI to reflect the modifications; and determining input data based on the at least one touch input and the one or more identified keys.

[0019] Other aspects and advantages of the invention will become apparent from the following detailed description taken in conjunction with the accompanying drawings which illustrate, by way of example, the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] The invention will be readily understood by the following detailed description in conjunction with the accompanying drawings, wherein like reference numerals designate like structural elements, and in which:

[0021] **FIG. 1** is a diagram of a computing device according to one embodiment of the invention.

[0022] **FIG. 2A** is a diagram of an electronic mixing console according to one embodiment of the invention.

[0023] **FIGS. 2B-2D** are diagrams illustrating operations of a slider according to one embodiment of the invention.

[0024] **FIGS. 2E-2G** are diagrams illustrating operations of a dial according to one embodiment of the invention.

[0025] **FIG. 3A** is a flow diagram of a mixing console process according to one embodiment of the invention.

[0026] **FIG. 3B** is a flow diagram of a keyboard process according to one embodiment of the invention.

[0027] **FIG. 4** is a multipoint touch method according to one embodiment of the invention.

[0028] **FIG. 5** is a block diagram of a computer system according to one embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0029] The invention relates to an electronic apparatus for media applications, such as an electronic mixing apparatus or an electronic keyboard apparatus, as well as associated methods for use of the electronic apparatus.

[0030] According to one aspect of the invention, the electronic mixing apparatus is provided on a touch screen that provides user input and display capabilities. In one embodiment, the touch screen is a multipoint touch screen so that multiple user touch inputs can be simultaneously acquired. The touch screen can display a Graphical User Interface (GUI) having mixing controls that can be selected and manipulated through user touch inputs with the touch screen. In one embodiment, the mixing controls being displayed with the GUI can be modified in real time as a user provides touch inputs with the touch screen.

[0031] Another aspect of the invention pertains to surface guides that are provided on the touch screen to assist with user input. The surface guides can be a permanent part of the touch screen or a removable part of the touch screen. In one embodiment, the surface guides can be part of an overlay sheet that can be affixed to the touch screen.

[0032] Still another aspect of the invention pertains to an electronic keyboard apparatus. The electronic keyboard apparatus (e.g., virtual keyboard) is provided on a touch-sensitive apparatus capable of simultaneously acquiring multiple user touch inputs.

[0033] Embodiments of the invention are discussed below with reference to **FIGS. 1-5**. However, those skilled in the art will readily appreciate that the detailed description given herein with respect to these figures is for explanatory purposes as the invention extends beyond these limited embodiments.

[0034] **FIG. 1** is a diagram of a computing device **100** according to one embodiment of the invention. The computing device **100** has a housing **102** that contains components and circuitry for computer processing by the computing device **100**. In addition, the housing **102** has a touch screen **104**. The touch screen **104** not only serves as an output device, such as a display screen, but also serves as an input device by way of a touch-sensitive surface provided over the display device. In one embodiment, the touch screen **104** is a multi-point touch screen that is capable of simultaneously receiving multiple touch inputs.

[0035] The computing device **100** can be a special purpose computing device or a general purpose computing device. The size and configuration of the computing device **100** can also vary. As an example, the computing device **100** can pertain to a tablet computer which integrally combines computer components with a touch screen into a tablet-like form factor.

[0036] In any case, when the computing device **100** is operating, the touch screen **104** can display media mixing controls. For example, the computing device **100** can execute a media mixing software application that provides media mixing functionality to the computing device **100**. The media mixing controls are utilized to facilitate user input of media mixing operations that are supported by the media mixing software application. Hence, the computing device **100** can be a central component of a media mixing system. The media mixing system would provide media inputs to the computing device **100** and would receive media outputs provided by the computing device **100**. The touch screen **104** of the computing device **100** displays the media mixing controls on the touch screen **104**. Hence, the media mixing controls are virtual controls that are graphically